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Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	ET Docket No. 96-2
Amendment of the Commission's Rules	)	RM-8165
to Establish a Radio Astronomy	)	
Coordination Zone in Puerto Rico	)	

TO: The Commission

COMMENTS OF TRW INC.

TRW Inc. ("TRW"), by its attorneys and pursuant to Section 1.415 of the Commission's rules, hereby comments upon the Commission's Notice of Proposed Rulemaking, ET Docket No. 96-2, FCC 96-12 (released February 8, 1996) (the "*NPRM*").

In the *NPRM*, the Commission proposes to require applicants for new or modified radio facilities in certain communications services operating within a Coordination Zone covering islands within the Commonwealth of Puerto Rico to provide written notification of their proposed operations to the Arecibo Radio Astronomy Observatory (the "Observatory") at or before the time their application is submitted to the Commission.[1] If the Observatory believes that operations proposed in an application would cause harmful interference to the Observatory, the applicant would be required to use reasonable efforts to resolve or mitigate the Observatory's

[1] *NPRM*, slip op. at ¶ 1.

concerns and to file an amendment to its application or a modification application if appropriate.[2] The purpose of the requirements proposed in the *NPRM* is to promote efficient resolution of harmful interference to the Observatory's operation.[3]

TRW supports the Commission's conclusion to exclude mobile satellite service ("MSS") mobile earth stations from the requirements proposed in the *NPRM*.[4] The imposition of such requirements on MSS mobile earth stations is unnecessary because the Commission already has promulgated elaborate rules specifically to protect the Observatory and other facilities in the Radio Astronomy Service ("RAS") from interference from MSS mobile earth stations.[5] Thus, as the Commission correctly notes, applying the coordination procedures proposed in the *NPRM* to MSS mobile earth stations would be "unreasonably burdensome."[6] TRW also supports the Commission's conclusion to exclude radio facilities using frequencies above 15 GHz (such as TRW's proposed MSS feeder links) from the requirements of the *NPRM*, since the Observatory does not use such frequencies and therefore the Commission need not be concerned that use of these frequencies will cause harmful interference to the Observatory.[7]

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[2]*Id.*, at ¶ 21.

[3]*Id.*, at ¶ 1.

[4]*Id.*, at ¶ 35.

[5]*See* 47 C.F.R. § 25.213(a); Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands, 9 FCC Rcd 5936, 5975-5983 (1994) ("*Big LEO Order*").

[6]*NPRM*, slip op. at ¶ 35.

[7]*Id.*, at ¶ 35.

I. Background.

TRW is one of three companies authorized by the Commission to construct and launch a global MSS system employing handheld portable earth stations capable of operating in the 1610-1626.5 MHz and 2483.5-2500 MHz bands.[8] A portion of the 1.6 GHz band (1610.6-1613.8 MHz) is allocated to the MSS and the RAS on a co-primary basis.[9] TRW's MSS system is also conditionally authorized to operate feeder links in the 27.5-30.0 GHz and 19.8-20.1 GHz bands.[10] These two bands are considerably higher than the bands in which the Observatory is capable of operating.[11]

II. Rules Already Exist To Protect The Observatory From Interference From MSS Systems.

Before authorizing MSS systems to share part of the 1.6 GHz band on a co-primary basis with the RAS, the Commission established a comprehensive set of rules to prevent

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[8] *See* TRW Inc., 10 FCC Rcd 2263, *erratum*, 10 FCC Rcd 3924 (Int'l Bur. 1995); Motorola Satellite Communications, Inc., 10 FCC Rcd 2268, *erratum*, 10 FCC Rcd 3925 (Int'l Bur. 1995); Loral/Qualcomm Partnership, L.P., 10 FCC Rcd 2333, *erratum*, 10 FCC Rcd 3926 (Int'l Bur. 1995).

[9] *See* Table of Frequency Allocations, 47 C.F.R. § 2.106.

[10] TRW Inc., 10 FCC Rcd 2263. "Feeder links" are the pathways over which an MSS system's satellites and fixed earth station facilities communicate in order to determine how to route a call to or from one of the system's mobile earth stations.

[11] Presently, the Observatory is only capable of operating on frequencies up to 3 GHz. *NPRM*, slip op. at ¶ 4. An upgrade expected to be completed later this year will enable the Observatory to make routine observations at frequencies up to 15 GHz. *Id.*

undue interference to the RAS from MSS operations.[12] The Commission developed these rules with the aid of extensive analysis by a negotiated rulemaking committee (the "Committee") whose members included, among others, MSS applicants, the National Science Foundation and the Committee on Radio Frequencies ("CORF").[13] The Observatory also participated in the development of these rules.[14]

Pursuant to the Commission's rules, MSS mobile earth stations in geographically defined protection zones are prohibited from operating on frequencies shared with the RAS (1610.6-1613.8 MHz) during periods of radio astronomy operation.[15] The Observatory is the focal point for one of these protection zones.[16] To maximize the effectiveness of the protection zone restrictions on the MSS, the Commission has arranged for the ESMU to notify each licensed MSS operator of the periods when RAS observations are occurring.[17] As an added precaution,

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[12]*See* 47 C.F.R. § 25.213(a); *Big LEO Order*, 9 FCC Rcd at 5975-5983.

[13]*See* "Report of the MSS above 1 GHz Negotiated Rulemaking Committee" (Apr. 6, 1993) at Appendix A to Annex 2; *Big Leo Order*, 9 FCC Rcd at 5976 (¶ 99). CORF, which is under the auspices of the National Academy of Sciences, is responsible for advancing the interest of radio astronomy in the United States. *Big LEO Order*, 9 FCC Rcd at 5977 n. 118. The Observatory is operated by Cornell University under a cooperative agreement with the National Science Foundation. *NPRM*, slip op. at n.1.

[14] See *Big LEO Order*, 9 FCC Rcd at 5982 (¶ 118), 6024 (Appendix A, item 23).

[15]47 C.F.R. § 25.213(a)(1); *Big LEO Order*, 9 FCC Rcd at 5977 (¶ 104). MSS licensees may substitute other methods to protect RAS operations only if such methods are shown to be effective and are approved by the National Science Foundation's Electromagnetic Spectrum Management Unit ("ESMU"). *Big LEO Order*, 9 FCC Rcd at 5978 (¶ 104).

[16]47 C.F.R. § 25.213(a)(1)(i).

[17]47 C.F.R. § 25.213 (a)(1)(vi); *Big LEO Order*, 9 FCC Rcd at 5978-79 (¶ 107).

the Commission also promulgated interference avoidance requirements for MSS mobile earth station transmissions in other portions of the 1.6 GHz band adjacent to the spectrum shared with the RAS.[18] In addition, even though the 4990-5000 MHz band is not allocated to the MSS, the Commission specifically established a limit on MSS spectral power flux density levels in this band in order to assure that the RAS is protected from interference in this band that might result from second harmonic spurious emissions of MSS transmissions in the 2483.5-2500 MHz band.[19]

Since the Commission has already placed extensive restrictions on MSS operations specifically to protect the Observatory from interference from MSS operations, it would serve no reasonable purpose to add additional regulatory and administrative requirements upon the MSS — particularly since the existing restrictions are based on the Commission's careful consideration of extensive analysis by a multilateral negotiated rulemaking committee and input from RAS representatives, including the Observatory. Indeed, the Observatory acknowledges that such additional requirements are unnecessary to avoid interference from MSS systems.[20]

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[18]47 C.F.R. § 25.213(a)(1)(iii); *Big LEO Order*, 9 FCC Rcd at 5979-81 (¶¶ 110-113).

[19]47 C.F.R. § 25.213(a)(3); *Big LEO Order*, 9 FCC Rcd at 5983 (¶ ¶ 120-122). Harmonic emissions are emissions at frequencies that are an integral multiple of the fundamental frequency. The first harmonic is the fundamental frequency itself and the second harmonic is a signal at twice that frequency. *NPRM*, slip op. at n.25.

[20]*NPRM*, slip op. at n. 3.

CONCLUSION

MSS licensees are already subject to comprehensive rules to protect the Observatory from potential interference from MSS operations in shared spectrum as well as adjacent spectrum and spectrum where interference may occur as a result of harmonic emissions. Accordingly, the requirements proposed in the NPRM are unnecessary to protect the Observatory from potential interference from licensed MSS systems.

Respectfully submitted,

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